REMARKS

In response to the Office Action mailed December 8, 2003 (hereinafter referred to as "the Office Action," Applicants respectfully request reconsideration in view of the above amendments and the following remarks. Support for new claim 23 can be found in Applicants' specification in paragraph [0013] on page 4.

Claim Rejections under 35 U.S.C. §102

Claims 1-5 were rejected as being anticipated by Williams and claim 6 was rejected as being anticipated by Davis et al. Claims 1-6 have been cancelled.

Claim Rejections under 35 U.S.C. §103(a)

Claims 6-9 were rejected as being unpatentable over Williams and Mimura et al. in view of each other. Claim 10 was rejected as being unpatentable over Williams and Mimura et al. in view of each other and further in view of Ohta. Claim 11 was rejected as being unpatentable over Williams in view of Moyer. Claim 12 was rejected as being unpatentable over Williams and Mimura et al. in view of each other, and further in view of Nakano et al. Claims 6-12 have been cancelled.

Claims 13-14 and claims 16-21 were rejected as being unpatentable over Williams and Mimura et al. in view of each other, and further in view of Nakano et al. Claim 15 was rejected as being unpatentable over Williams and Mimura et al. and Nakano et al. in view of each other, and further in view of Moyer. Claim 22 was rejected as being unpatentable

over Williams and Mimura et al. and Nakano et al. in view of each other, and further in view of Ohta. Applicants respectfully traverse these rejections because there is no suggestion in the cited references to form a proper combination and there is no reasonable expectation of success.

Under MPEP § 2142, there are three requirements to establish a *prima facie* case of obviousness.

1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings.
2) There must be a reasonable expectation of success.
3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

It should be noted that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 13 recites, "[a] resistive heating vacuum deposition process to deposit powdered phosphor, comprising: providing a quantity of powdered phosphor, placing the powdered phosphor in a tantalum boat, resistively heating the powdered phosphor, depositing by vacuum deposition the heated powdered phosphor on a surface, and

annealing the deposited powdered phosphor." Applicants submit that claims 14-22 and new claim 23 depend from independent claim 13.

First, Applicants respectfully submit that the Examiner's rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior art to modify the Williams patent (hereinafter referred to as Williams) with the Mimura et al. patent (hereinafter referred to as Mimura) and the Nakano et al. patent (hereinafter referred to as Nakano). The Examiner must make a determination whether the claimed invention "as a whole" would have been obvious at the time the invention was made. (See MPEP § 2142). The Federal Circuit has stated that merely a combination of old elements does not negate patentability, but that "[t]he claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination..." (See *Lindermann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1984.) Accordingly, *Lindermann* indicates that an invention that is a combination of old elements will be nonobvious if the old elements typically deal with different problems.

The Examiner states on page 3 of the Office Action that "'099 [Mimura] teaches vacuum evaporation of ZnS:Mn...followed by annealing ...'007 [Williams] does not explicitly teach annealing the vacuum deposited phosphor...'007 [Williams] and '099 [Mimura] do not teach the use of a tantalum boat...'813 [Nakano] teaches that tantalum

boats may be used as the receptacle for resistive evaporation of phosphors..."

Applicants respectfully submit that the references cited by the Examiner, i.e., Williams, Mimura and Nakano, deal with very different problems.

Williams discloses an electro-luminescent structure containing a phosphor layer and focuses on how the structure differs from the prior art by not requiring a high temperature postgrowth anneal. The structure disclosed in Williams comprises a phosphor layer sandwiched between two semi-insulator SiO layers. (See Williams abstract and col. 2, lines 48-49.) No postdeposition anneal is needed. (See Williams col. 2, line 35.) Mimura, on the other hand, discloses a thin-film electroluminescence device comprising an electroluminescent phosphor layer sandwiched between a first and a second gadolinium oxide (Gd_2O_3) insulating layer. The Gd_2O_3 layer provides a thin-film EL device which is excellent in emission characteristics and durable in addition. Thus, the Gd_2O_3 layer provides an improvement over materials, such as Al_2O_3, Ta_2O_5, $BaTiO_3$, $PbTiO_3$, Y_2O_3 and Sm_2O_3, and is therefore an essential feature of the patented invention. (See Mimura abstract; col. 2, lines 1-11; col. 2, lines 29-31; and Figures 4-6.) In contrast to both Williams and Mimura, Nakano discloses a process for preparing a radiation image storage panel containing an activated stimulable phosphor or a stimulable phosphor layer activated with an activator. The phosphors disclosed in Nakano are radiation storage phosphors, such as, Tl-activated RbBr:Tl phosphors and other similar phosphors, which are different than the cathodoluminescence phosphors disclosed in

Williams and Mimura. In all embodiments disclosed by Nakano, an activator, e.g., TlBr, is needed. (See Nakano abstract and col. 9-10.) The phosphors disclosed in Williams and Mimura do not require the use of an activator.

Applicants respectfully suggest that one skilled in the art would not be motivated to combine a reference teaching a vacuum deposited cathodoluminescence phosphor on an SiO substate without the need for a postdeposition anneal, wherein lacking a postdeposition anneal is considered advantageous, with a reference teaching a vacuum deposited cathodoluminescence phosphor on a Gd_2O_3 substrate that requires a postdeposition anneal. Applicants further suggest that one skilled in the art would not be motivated to additionally adding to that cathodoluminescence combination a third reference teaching the deposition of a radiation storage phosphor using a tantalum boat to meet Applicants claim limitations. Thus, Applicants respectfully request that the rejection be withdrawn.

Second, Applicants respectfully submit that the rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior art to combine Williams and Mimura because Williams teaches away from such a combination. "A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the references would be discouraged from following the path set out in the reference or

would be led in a direction divergent from the path the Applicant took." *In re Gurley,* 27 F.3d 551, 31 U.S.P.Q.2d 1130 (Fed. Cir.1994). The Examiner states on page 3 of the Office Action that "'009 [Mimura] teaches vacuum evaporation of ZnS:Mn...followed by annealing ...'007 [Williams] does not explicitly teach annealing the vacuum deposited phosphor." In fact, Williams discloses an electro-luminescent structure that was intentionally designed not require a post deposition anneal. "ZnF_2:Mn is unique among luminescent materials in being capable of rather coefficient cathodoluminescence in the form of transparent thin films formed by vacuum evaporation. No post deposition anneal is needed." (See Williams col. 2, lines 31-35.) Williams distinguishes the disclosed structure from those of the prior art by stating that "[i]n all of the foregoing, a high temperature postgrowth anneal is required," thus indicating that it is advantageous to prepare the phosphor without annealing. (See Williams col. 1, lines 46-48.) Thus, Applicants respectfully submit that a person of ordinary skill in the art upon reviewing the Williams reference would find that this reference actually teaches away from a combination with the high temperature anneal process disclosed in Mimura.

Third, Applicants respectfully submit that the rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior art to combine Williams, Mimura and Nakano because none of the prior art references teach the desirability of the claimed invention. Obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347 (Fed. Cir. 1992). As discussed above, Williams teaches against a desire to combine with Mimura and neither suggest a desire to use a tantalum boat during the deposition process.

Finally, Applicants submit that the rejection fails under the first prong of the obviousness test because only through impermissible hindsight would motivation be found to combine Williams, Mimura and Nakano. MPEP §2142 states "the tendency to resort to 'hindsight' based upon Applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Also, under MPEP §2143.01, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). As previously discussed, Williams, Mimura and Nakano all deal with different problems. One skilled in the art would not be motivated to combine a reference teaching a vacuum deposited cathodoluminescence phosphor on an SiO substate without the need for a postdeposition anneal, wherein lacking a postdeposition anneal is considered advantageous, with a reference teaching a vacuum

deposited cathodoluminescence phosphor on a Gd_2O_3 substrate that requires a postdeposition anneal and additionally combining with that cathodoluminescence combination a third reference teaching the deposition of a radiation storage phosphor using a tantalum boat to meet the Applicants' claim limitations .

Applicants respectfully submit that independent claim 13 is allowable over the cited references. Since claims 14-23 ultimately depend on claim 13, Applicants respectfully suggest that these claims are also allowable over the cited references.

CONCLUSION

Reconsideration and allowance of claims 13-22 is respectfully requested. Consideration and allowance of claim 23 is respectfully requested. The Applicants respectfully submit that no new matter has been introduced by these amendments to the claims. In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be resolved by a telephone conference, the Examiner is urged to contact the undersigned.

In the unlikely event that the Patent Office determines that an extension and/or other relief is required as a result of this statement, Applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due to our Deposit Account No.12-0695. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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